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SITE INVESTIGATION
PHOTOGRAPH ALBUM
SITE 10 - ORIGINAL BASE LANDFILL

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

CONTRACT TASK ORDER 0369

SEPTEMBER, 1998

Prepared For:

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LIST OF ACRONYMS AND ABBREVIATIONS

Baker	Baker Environmental, Incorporated
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
DoN	United States Department of the Navy
FFA	Federal Facilities Agreement
GSRA	Greater Sandy Run Area
IAS	Initial Assessment Study
MCB	Marine Corps Base
NC DENR	North Carolina Department of Environment and Natural Resources
NPL	National Priorities List
PVC	Polyvinyl Chloride
RCRA	Resource Conservation Recovery Act
RI	Remedial Investigation
SI	Site Investigation
USEPA	United States Environmental Protection Agency
WAR	Water and Air Research, Inc.

1.0 INTRODUCTION

Marine Corps Base (MCB) Camp Lejeune was placed on the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) National Priorities List (NPL) effective November 4, 1989 (CERCLA, 1989). Subsequent to this listing, the United States Environmental Protection Agency (USEPA) Region IV, the North Carolina Department of Environment and Natural Resources (NC DENR), the United States Department of the Navy (DoN) and the Marine Corps entered into a Federal Facilities Agreement (FFA) for MCB Camp Lejeune. The primary purpose of the FFA was to ensure that environmental impacts associated with past and present activities at the MCB are thoroughly investigated, and that appropriate CERCLA response and Resource Conservation Recovery Act (RCRA) corrective action alternatives are developed and implemented as necessary to protect the public health and welfare, and the environment (MCB Camp Lejeune, 1989).

Under the scope of the FFA, a Site Investigation (SI) is typically implemented to determine whether contamination is present at a site. If additional work is warranted based on the findings of the SI, then a remedial investigation (RI) is performed at the site. The RI is performed to determine the extent of contamination at the site. This Site Investigation Photograph Album illustrates the SI field activities conducted at Site 10 - Original Base Landfill.

1.1 Location and Setting of MCB Camp Lejeune

MCB Camp Lejeune is located within the Coastal Plain Physiographic Province. It is located in Onslow County, North Carolina, approximately 45 miles south of New Bern and 47 miles north of Wilmington. The facility covers approximately 236 square miles. This includes the recent acquisition of approximately 64 square miles west of the facility within the Greater Sandy Run Area (GSRA) of the county. The military reservation is bisected by the New River, which flows in a southeasterly direction and forms a large estuary before entering the Atlantic Ocean.

The eastern border of MCB Camp Lejeune is the Atlantic shoreline. The western and northwestern boundaries are U.S. Route 17 and State Route 24, respectively. The City of Jacksonville, North Carolina, borders MCB Camp Lejeune to the north. The location of MCB Camp Lejeune is depicted in Figure 1-1.

1.2 Location and Setting of Site 10 - Original Base Landfill

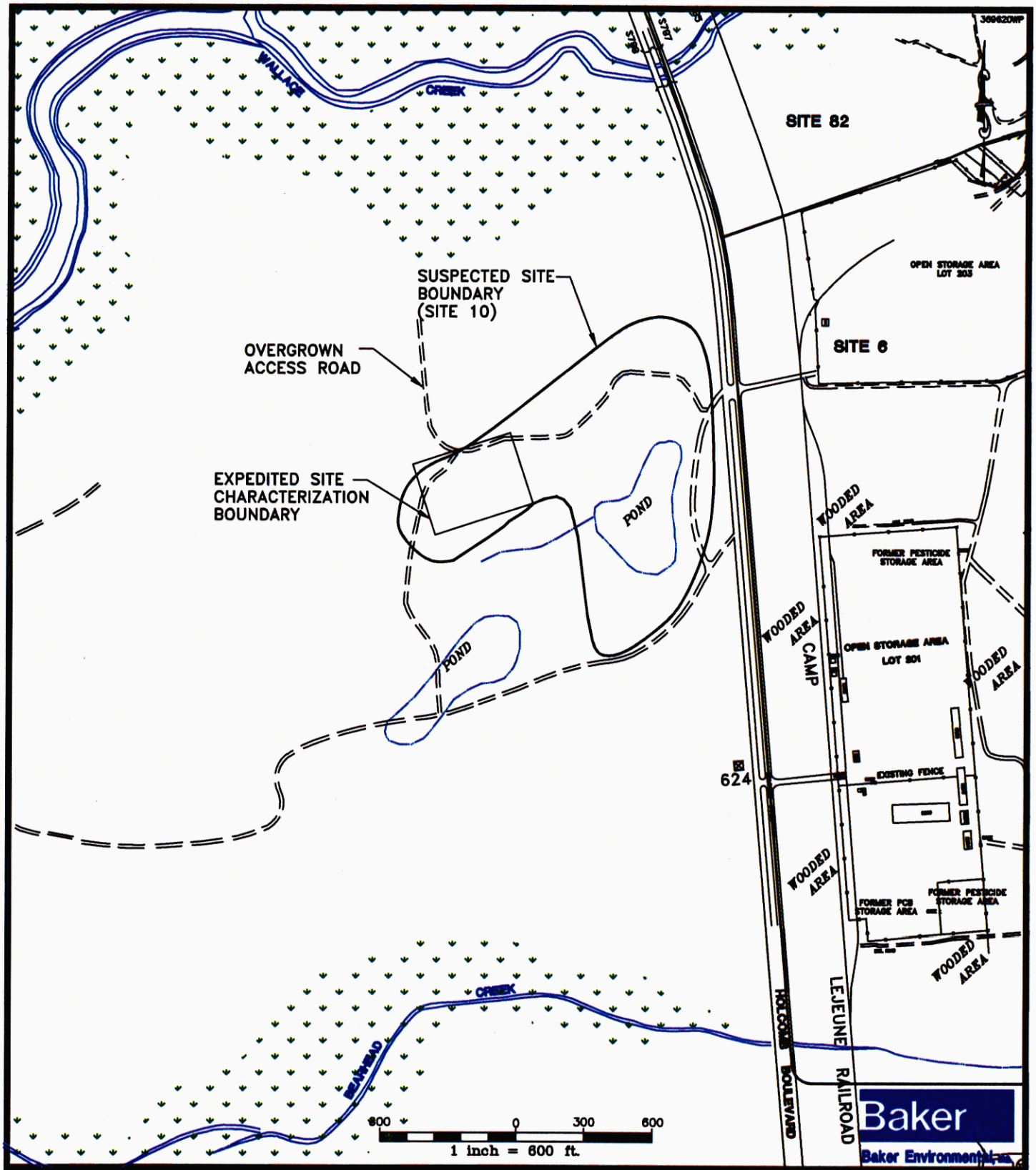
The Original Base Landfill (Site 10) refers to a five to ten acre former landfill located on the western side of Holcomb Boulevard, approximately 1,600 feet south of Wallace Creek and 1,750 feet north of Bearhead Creek (Figure 1-1). The Initial Assessment Study (IAS) (Water and Air Research [WAR], 1983) indicated that the area was used as a disposal site for construction debris and as a burn dump prior to 1950 during the initial construction of the base.

1.3 Purpose and Format of the Site Investigation Photograph Album

The purpose of this photographic album is to provide the DoN and Marine Corps with a visual understanding of Site 10 and a brief overview of the SI field activities. The field program at Site 10 was initiated to characterize potential environmental impacts and threats to human health, ecology and the environment resulting from previous activities, and to determine whether additional work is warranted in the form of a RI. The field activities for Site 10 were conducted by Baker Environmental, Inc. (Baker) for the DoN from March 16 through March 25, 1998. This album contains representative site and site activity

photographs. Figure 1-2 illustrates the location of each photograph and the direction in which it was taken.

The Site Investigation Photograph Album is formatted as follows. Section 1.0 provides a brief introduction to MCB, Camp Lejeune and Site 10 - Original Base Landfill, and explains the purpose and format of the photograph album. Section 2.0 provides a description of the site and site history. Section 3.0 describes the field investigations (i.e., soil investigation, groundwater investigation, and surface water and sediment investigation) conducted at Site 10. Photographs from the site are provided for Sections 2.0 and 3.0.



LEGEND

- ACCESS ROAD
- POND
- WETLANDS
- SUPPLY WELL
- FENCE

FIGURE 1-1
SITE LOCATION MAP
SITE 10, ORIGINAL BASE LANDFILL
SITE INVESTIGATION, CTO - 0369

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

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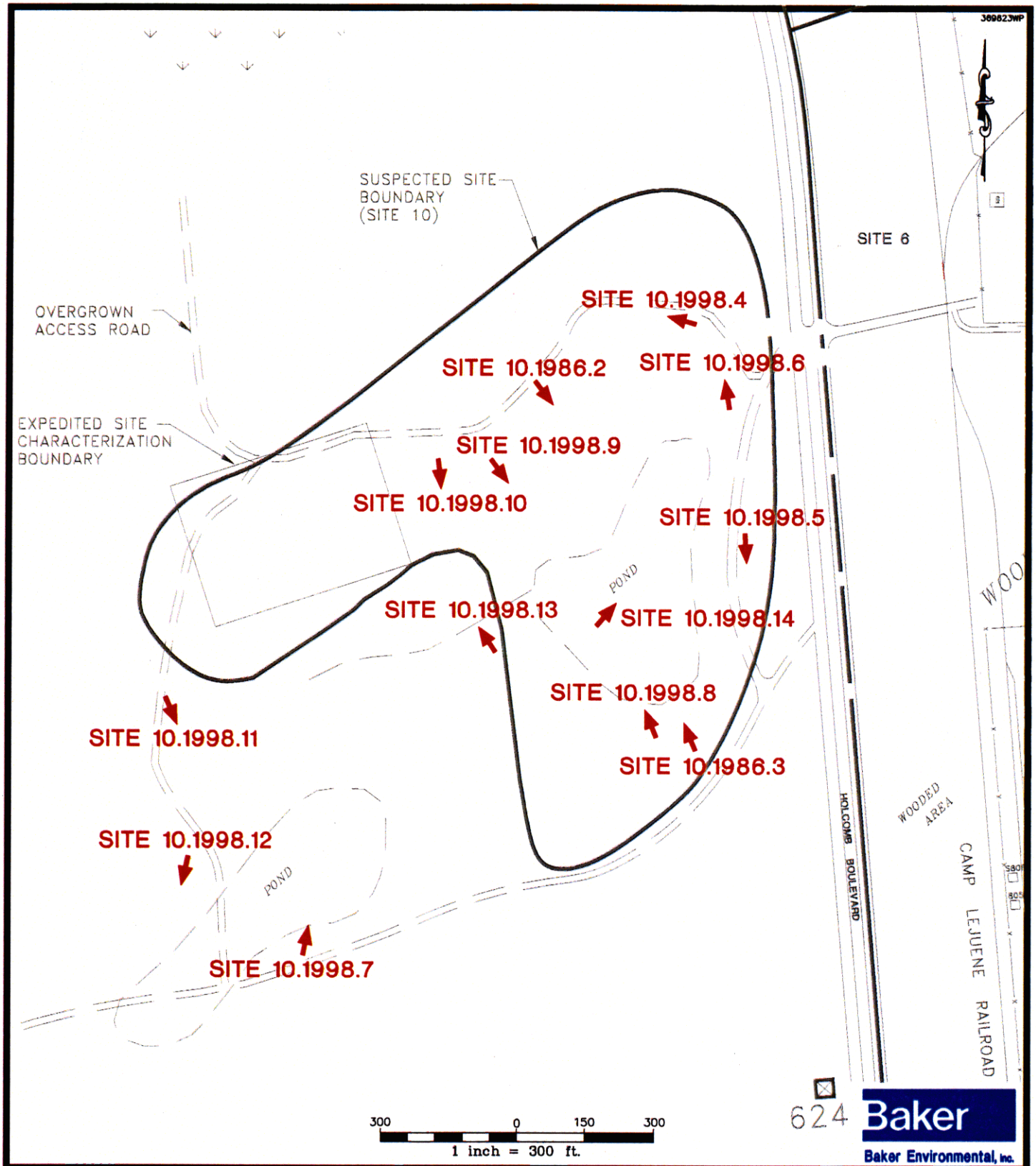


LEGEND

SITE 10.1986.2 – LOCATION AND DIRECTION OF PHOTOGRAPH

– SITE BOUNDARY

– WETLANDS

– OVERGROWN ACCESS ROAD

FIGURE 1–2
LOCATION AND DIRECTION OF PHOTOGRAPH
SITE 10, ORIGINAL BASE LANDFILL
SITE INVESTIGATION, CTO – 0369

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

2.0 SITE CHARACTERISTICS

2.1 Site Description

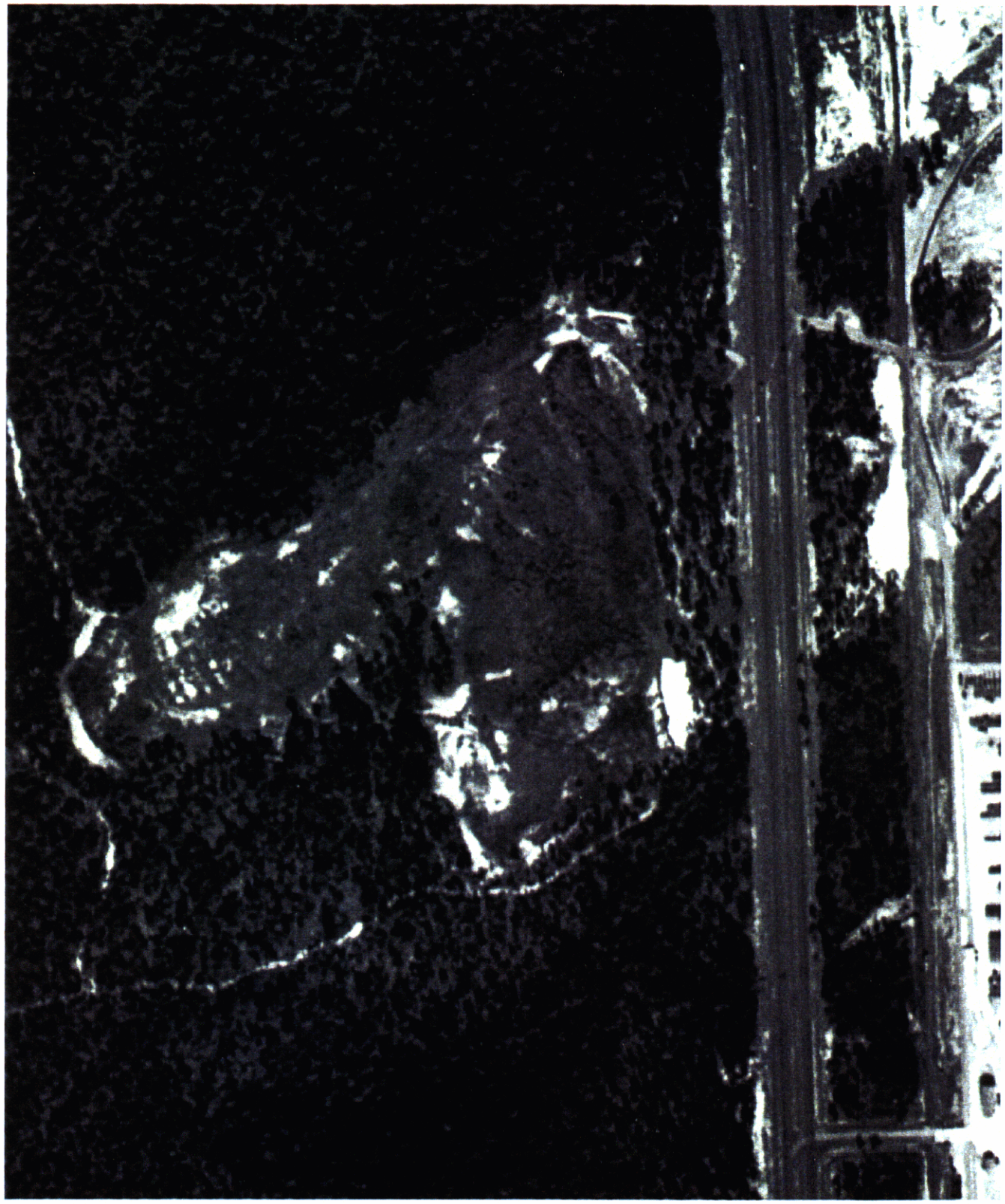
The aerial photograph taken October 21, 1949 clearly depicts the kidney-shape of Site 10. Most of the trees on the site had been cleared and access roads were established throughout the area. As seen in several photographs, clearings are still visible throughout the site. Young trees (varying in age from saplings to trees 30 to 40 years in age) are beginning to reestablish themselves on the site, and a thick underbrush is present throughout much of the area. Parts of the access roads have also become overgrown. They are, however, still visible throughout the site.

The topography of the site slopes from the western, eastern and southern edges toward the middle and northern edge of the study area. Much of the area is near groundwater level creating a marshy environment. Two unexpected, relatively large ponds exist on the southern-half of the site within the topographical low area during rainy seasons. Due to the seasonal nature and shallow depth (2.5 feet) of the ponded areas, these areas would have very low dissolved oxygen levels and high water temperatures which would not be able to support aquatic life.

2.2 Site History

It is believed the Original Base Landfill was operated prior to 1950 during construction of the base. The Initial Assessment Study (IAS) was the first of two investigations previously conducted at the site. It indicated that the area was used as a disposal site for construction debris and as a burn dump. A site visit conducted in September 1996, confirmed the presence of construction debris including concrete, bricks, scrap metal, metal piping and asphalt within the boundaries of the site. During the IAS, it was decided that the site did not need further investigation and it was removed from the list of sites requiring further investigation. In 1994, two marines were conducting night maneuvers and reported fell into an "open trench" receiving a rash from an "oily substance" that they had contacted at the bottom. Site 10 was one of two sites that the marines may have been crossing while on maneuvers. It was therefore determined that the site should be investigated further to determine if contamination exists.

The site investigation field program at Site 10 was initiated to characterize potential environmental impacts and threats to human health, ecology and the environment resulting from previous activities. The field work was initiated March 16 and concluded March 25, 1998. The field program consisted of a soil investigation, a groundwater investigation, a surface water, and a sediment investigation.



SITE 10. 1949. 1

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AERIAL PHOTOGRAPH OF SITE 10 TAKEN OCTOBER 21, 1949. CLEARLY DEPICTS THE KIDNEY SHAPE OF THE SITE. MOST OF THE TREES ON THE SITE HAD BEEN CLEARED.

Site 10.1986.2

Site 10.1986.3

Reestablishing Habitat

These photographs taken in 1986 illustrate the young age of the trees on Site 10 (30-40 years) and the thick underbrush which is present throughout much of the area. This type of habitat is typical of an area which is reestablishing itself after a disturbance.

Site 10.1998.4

Site 10.1998.5

Site 10.1998.6

Reestablishing Habitat and Evidence of Use

Clearings are still visible throughout much of the site. The young age of the trees and underbrush is also illustrated. Although the access roads are becoming overgrown, they are still obvious throughout the site. These access roads, first established for access to the landfill, are still being used for military training maneuvers.

Site 10.1998.7

Ponded Areas

Although unexpected, two relatively large shallow ponded areas exist on Site 10. They are located in topographically low areas during the rainy seasons. The terrestrial vegetation in the ponded areas and the lack of aquatic life indicate that the ponds are most likely seasonal in nature.

Site 10.1986.8

Site 10.1996.9

Site 10.1996.10

Evidence of Debris

An Initial Assessment Study indicated that the site was used as a disposal site for construction debris and as a burn site. These pictures, taken on a site visit in September 1996, confirm the presence of concrete, scrap metal, and metal piping within the boundaries of the site.

3.0 FIELD INVESTIGATIONS

Soil, groundwater, surface water and sediment investigations were conducted at Site 10 to support an ecological risk screening and human health risk assessment. The following paragraphs summarize these investigations.

3.1 Soil Investigation

A soil investigation was conducted at Site 10 to assess whether soils at the site have been contaminated by debris disposed during the site's operation as a landfill. Baker supervised the advancement of 25 soil borings (10-SB01 through 10-SB25) using a geoprobe sampling device. The soil borings were advanced for the purpose of sample collection, geologic identification and description, and temporary monitoring well installation. Drilling activities were conducted using a truck-mounted geoprobe rig and a hand sampling unit supplied and operated by Parratt Wolff, Inc. of Raleigh, North Carolina.

3.2 Groundwater Investigation

The groundwater investigation at Site 10 consisted of the following activities: installation of nine temporary groundwater monitoring wells, static water measurement, purging, sampling and temporary well abandonment. The intent of the investigation was to confirm the presence or absence of groundwater contamination in the shallow aquifer and evaluate groundwater flow patterns across the site.

The temporary groundwater monitoring wells installed at Site 10 were constructed of 1-inch nominal diameter, schedule 40, flush-jointed and threaded, polyvinyl chloride (PVC) casing with 0.010 slotted screen. The wells were constructed with a five or 10-foot section of screen allowing the screened portion of the well to intercept the water table. The native soils were allowed to collapse around the well, filling the annulus between the well screen and the borehole wall. Upon completion of sampling activities, the well was removed and the borehole was backfilled with bentonite and hydrated.

Samples were collected using a peristaltic pump and Teflon tubing. Flow rates were less than 1/4 gallon per minute to establish low flow conditions. This method of purging allows less disturbance within the water column therefore, fewer sediments are captured during sampling creating a false impression of high inorganics in groundwater and the potential of organic compound volatilization is decreased. The tubing was dedicated to each well and discarded upon completion of sample collection.

3.3 Surface Water Investigation

Baker collected six surface water and sediment samples from two surface water bodies and a small stream located within the boundaries of the site to assess possible impacts from the site and assist in human health and ecological risk assessments.

Baker collected the surface water samples from the approximate mid-vertical point at each location by dipping an unpreserved sample jar into the water by hand (if the water was greater than one foot deep). If the water was less than one-foot deep, care was taken while collecting the sample to ensure that the sampler did not contact and/or stir up the sediments, while still being relatively close to the sediment-water interface.

3.4 Sediment Investigation

Sediment samples were collected after the surface water samples to minimize sediment disturbance and suspension. Samples were collected at a depth of zero to six inches. The six to 12 inch interval was unobtainable because the coring device could not penetrate the soils. The samples were collected using a decontaminated stainless steel sediment corer fitted with a new disposable plastic liner, eggshell catch, and a decontaminated plastic nose cone.

Sampling personnel pushed the sediment corer using the necessary extension rods, between four and six inches into the sediment. The sediment corer was then withdrawn and the plastic liner was removed from the corer. The sediment was placed into clean aluminum pie pans for compositing.

Site 10.1998.11

Soil Investigation

Parratt Wolfe, Inc. conducted the drilling activities at Site 10 using a truck-mounted geoprobe rig. Twenty-five soil borings were advanced for the purpose of sample collection, geological identification and description, and temporary monitoring well installation. Soil samples were obtained via a direct push soil sampler. Surface soil samples were collected from 0-12 inches below ground surface (bgs) after the first few inches of top soil and matted roots were removed. A single vadosezone subsurface soil sample was collected from directly above the water table in each boring. Sixteen soil borings were advanced for soil classification and sample collection purposes only and were terminated at the water table. The remaining nine soil borings were completed as temporary monitoring wells extending 5-10 feet below the water table.

Site 10.1998.12

Groundwater Investigation

A peristaltic pump and teflon tubing were used to collect the groundwater samples from the surficial aquifer under Site 10. Prior to sampling, the wells were purged a minimum of 3-5 well volumes using low-flow techniques until the groundwater had stabilized. Temperature, conductivity, turbidity, and pH were collected after each well volume was removed to determine stabilization.

Site 10.1998.13

Surface Water Investigation

Six surface water samples were obtained from the two ponded areas and a small stream leading away from the northern-most pond. They were collected by dipping an unreserved sample jar into the water at the approximate mid-verticle point then transferring the sample to the appropriate sample containers. Since the water bodies were nearly stagnant, samples were collected with care to minimize sediment disturbance and suspension.

Site 10.1998.14

Sediment Investigation

Sediment samples were obtained from the six surface water sites in the two ponded areas and stream. They were collected after the surface water samples to minimize sediment disturbance and suspension. Samples were collected from 0-6 inches using a decontaminated stainless steel sediment corer fitted with a new disposable plastic liner, eggshell catch, and a decontaminated plastic nose cone. The sample was then removed from the plastic liner of the corer and placed into aluminum pie pans for compositing before transferred to the appropriate sample containers.

4.0 REFERENCES

CERCLA. 1989. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 National Priorities List. 54 Federal Register 41015. October 4, 1989.

MCB, Camp Lejeune. 1989. Federal Facility Agreement. December 6, 1989.

WAR. 1983. Water and Air Research, Inc. Initial Assessment Study of Marine Corps Base, Camp Lejeune, North Carolina. Prepared for Naval Energy and Environmental Support Activity.